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What is claimed is:

1. A gateway comprising:
 - a switching circuit;
 - a digital TV satellite receiver having an input for coupling to a satellite dish and an output for coupling to said switching circuit;
 - an infrared or radio frequency receiver circuit for receiving commands and data from a wireless remote and coupled to said switching circuit;
 - a conventional modem coupled to said switching circuit and having a port for coupling to a conventional telephone line;
 - a decompression and conversion circuit having a digital data input coupled to said switching circuit and having video and audio analog signal output ports and functioning to decompress digital video and audio data supplied by said switching circuit and convert said decompressed data into analog NTSC, PAL or SECAM video signals and audio signals at said video and audio analog signal output ports and to receive uncompressed IP packet data from said modem or said receiver and convert it to video and/or audio analog signals at said video and audio output ports, respectively;
 - a hard disk coupled to said switching circuit; and
 - a computer coupled to control signal inputs of said switching circuit and coupled to send data to and receive data from said switching circuit, and programmed to control said switching circuit in accordance with commands received from a wireless remote control via said receiver circuit to make the proper connections to record digital video broadcast data on said hard disk and/or convert said digital video broadcast data into analog video and audio signals to drive said video and audio output ports for coupling to a conventional television or to supply IP packet data from said modem or receiver to said decompression and conversion circuit for conversion to video and/or audio signals at said video and audio output ports.

2. The apparatus of claim 1 wherein said gateway includes an MP3 server therein.

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1 3. A gateway that implements TIVO-like functions comprising:
2 a switching circuit;
3 a digital TV satellite receiver having an input for coupling to a satellite dish
4 and an output for coupling to said switching circuit;
5 an infrared or radio frequency receiver circuit for receiving commands and
6 data from a wireless remote and coupled to said switching circuit including
7 commands to carry out one or more TIVO functions;
8 a conventional modem coupled to said switching circuit and having a port for
9 coupling to a conventional telephone line;
10 a decompression and conversion circuit having a digital data input coupled to
11 said switching circuit and having video and audio analog signal output ports and
12 functioning to decompress digital video and audio data supplied by said switching
13 circuit and convert said decompressed data into analog NTSC, PAL or SECAM video
14 signals and audio signals at said video and audio analog signal output ports and to
15 receive uncompressed IP packet data from said modem or said receiver and convert it
16 to video and/or audio analog signals at said video and audio output ports,
17 respectively;
18 a hard disk coupled to said switching circuit; and
19 a computer coupled to control signal inputs of said switching circuit and
20 coupled to send data to and receive data from said switching circuit, and programmed
21 to control said switching circuit in accordance with commands received from a
22 wireless remote control via said receiver circuit to make the proper connections to
23 record digital video broadcast data on said hard disk and/or convert said digital video
24 broadcast data into analog video and audio signals to drive said video and audio output
25 ports for coupling to a conventional television or to supply IP packet data from said
26 modem or receiver to said decompression and conversion circuit for conversion to
27 video and/or audio signals at said video and audio output ports, said one or more
28 computer programs for controlling said computer to control said satellite receiver,
29 modem, switching circuit, hard disk and decompression and conversion circuitry to
30 download program guide data via said modem and to carry out one or more TIVO
31 functions requested via wireless commands received at said receiver from a wireless
32 remote control.

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1 4. A gateway that implements TIVO-like functions as well as interface one or more
2 peripherals to at least two different broadband digital data transmission mediums,
3 comprising:

4 a switching circuit;

5 a digital TV satellite receiver having an input for coupling to a satellite dish
6 and an output for coupling to said switching circuit;

7 an infrared or radio frequency receiver circuit for receiving commands and
8 data from a wireless remote and coupled to said switching circuit including
9 commands to carry out one or more TIVO functions;

10 a conventional modem coupled to said switching circuit and having a port for
11 coupling to a conventional telephone line;

12 a cable modem coupled to said switching circuit;

13 a network interface circuit or bus driver coupled to said switching circuit as
14 well as to a port for connection to a local area network or external bus;

15 rate shaping circuitry coupled to said switching circuit for altering the
16 bandwidth of data routed through said rate shaping circuitry;

17 a decompression and conversion circuit having a digital data input coupled to
18 said switching circuit and having video and audio analog signal output ports and
19 functioning to decompress digital video and audio data supplied by said switching
20 circuit and convert said decompressed data into analog NTSC, PAL or SECAM video
21 signals and audio signals at said video and audio analog signal output ports and to
22 receive uncompressed IP packet data from said modem or said receiver and convert it
23 to video and/or audio analog signals at said video and audio output ports,
24 respectively;

25 a hard disk coupled to said switching circuit; and

26 a computer coupled to control signal inputs of said switching circuit and
27 coupled to send data to and receive data from said switching circuit, and programmed
28 to control said switching circuit in accordance with commands received from a
29 wireless remote control via said receiver circuit to make the proper connections to
30 record digital video broadcast data on said hard disk and/or convert said digital video
31 broadcast data into analog video and audio signals to drive said video and audio output

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ports for coupling to a conventional television or to supply IP packet data from said conventional modem or receiver to said decompression and conversion circuit for conversion to video and/or audio signals at said video and audio output ports, said one or more computer programs for controlling said computer to control said satellite receiver, modem, switching circuit, hard disk and decompression and conversion circuitry to download program guide data via said modem and to carry out one or more TIVO functions requested via wireless commands received at said receiver from a wireless remote control, and/or to control said switching circuit to supply IP or MPEG format packet data from said cable modem to said network interface circuit or bus driver for output to one or more peripherals or to said decompression and conversion circuit for conversion to analog video and/or audio signals at said video and audio output port for display on a conventional television, and programmed to control said switch to route selected data through said rate shaping circuitry and to control said rate shaping circuitry to alter the bandwidth of data routed therethrough.

5. A gateway that implements TIVO-like functions as well as interface one or more peripherals to at least two different broadband digital data transmission mediums, comprising:
- a switching circuit;
 - a digital TV satellite receiver having an input for coupling to a satellite dish and an output for coupling to said switching circuit;
 - an infrared or radio frequency transceiver circuit for exchanging commands and data with a wireless remote and coupled to said switching circuit said exchanging of commands and data including exchanging of commands and data to carry out one or more TIVO functions and to display video images on said wireless remote;
 - a conventional modem coupled to said switching circuit and having a port for coupling to a conventional telephone line;
 - high bandwidth digital data communication means coupled to said switching circuit for exchanging data digitally at high data rate between said gateway and a headend;

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16 a network interface circuit or bus driver coupled to said switching circuit as
17 well as to a port for connection to a local area network or external bus;

18 a decompression and conversion circuit having a digital data input coupled to
19 said switching circuit and having video and audio analog signal output ports and
20 functioning to decompress digital video and audio data supplied by said switching
21 circuit and convert said decompressed data into analog NTSC, PAL or SECAM video
22 signals and audio signals at said video and audio analog signal output ports and to
23 receive uncompressed IP packet data from said modem or said receiver and convert it
24 to video and/or audio analog signals at said video and audio output ports,
25 respectively;

26 a hard disk coupled to said switching circuit; and

27 a computer coupled to control signal inputs of said switching circuit and
28 coupled to send data to and receive data from said switching circuit, and programmed
29 by one or more computer programs to control said switching circuit in accordance
30 with commands received from a wireless remote control via said transceiver circuit
31 to make the proper connections to record one or more programs encoded in digital
32 video broadcast data on said hard disk either simultaneously or by timed recording in
33 the future, and/or programmed to convert said digital video broadcast data into
34 analog video and audio signals to drive said video and audio output ports for coupling
35 to a conventional television, and programmed to control said switching circuit to
36 supply IP packet data from said conventional modem or transceiver to said high
37 bandwidth digital data communication means for transmission to a headend circuit to,
38 *inter alia*, request video programs, play games, etc., said one or more computer
39 programs for controlling said computer to control said satellite receiver,
40 conventional modem and/or high bandwidth digital data communication means, said
41 switching circuit, hard disk and decompression and conversion circuitry to
42 implement TIVO functions in said gateway by downloading program guide data via said
43 conventional modem or said high bandwidth digital data communication means and to
44 carry out one or more other TIVO functions requested via wireless commands
45 received at said receiver from a wireless remote control, and/or to control said
46 switching circuit to supply IP or MPEG packet data from said high bandwidth digital
47 data communication means or said satellite receiver or said conventional modem to

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48 said network interface circuit or bus transceiver for output to one or more
49 peripherals coupled to said gateway via a local area network or external bus, or to
50 supply said IP or MPEG packet data to said decompression and conversion circuit for
51 conversion to analog video and/or audio signals at said video and audio output port for
52 display on a conventional television, and programmed to control said switch to route
53 selected data through said rate shaping circuitry and to control said rate shaping
54 circuitry to alter the bandwidth of data routed therethrough to match the available
55 bandwidth of whatever data path on which said data is to be transmitted.

1 6. The apparatus of claim 5 further comprising an MP3 server coupled to said
2 switching circuit and controlled by said computer to supply MP3 data to said network
3 interface circuit or bus transceiver for output to one or more peripherals coupled to said
4 gateway via a local area network or external bus.

1 7. A gateway that implements TIVO-like functions as well as interface one or more
2 peripherals to at least one broadband digital data transmission mediums, comprising:
3 one or more transceiver means for sending data to and receiving compressed
4 video and/or iData from a headend via one or more broadband, digital data
5 transmission mediums,
6 one or more processing means coupled to said one or more transceiver means,
7 for performing MPEG transport demultiplexing, video decoding, MPEG encoding,
8 conditional access and decryption and rate shaping functions as necessary depending
9 upon the particular one or more types of transceiver means in use to generate digital
10 video and iData from a headend having a data rate suitable for transmission over a
11 local area network to the peripheral that requested said data and ready for
12 packetization, and for at least rate shaping data to be transmitted to said headend
13 prior to sending said data so said transceiver means such that said data has a data rate
14 compatible with available upstream bandwidth to said headend awarded to said
15 gateway;
16 one or more IP video means for encapsulating said video and iData from said
17 headend received from said processing means into IP packets;

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18 a packet switch/router for receiving data from said IP video means and
19 routing said packets based upon data in routing tables to an appropriate destination
20 and for receiving data packets addressed to said headend and routing said packets to
21 said headend via using said processing means and said transceiver means;

22 a TIVO server means coupled to said packet switch/router for receiving
23 commands requesting one or more TIVO functions and for implementing said TIVO
24 functions by sending the appropriate menu or video data to said router for
25 appropriate routing;

26 a DHCP server means coupled to said router for assigning IP addresses to
27 client processes in said peripherals and said gateway;

28 a computer coupled to said router and programmed to receive commands and
29 requests from peripherals coupled to said gateway and from said headend and to write
30 data to said routing tables to control routing operations by said packet switch/router
31 to cause requested data and commands to get to the appropriate destination;

32 one or more local area network interface circuits (LAN NIC) permanently or
33 modularly coupled to said router for sending data received from said router to an
34 appropriate peripheral coupled to said local area network interface circuit by a local
35 area network transmission medium, and for receiving data and/or commands from a
36 peripheral addressed to said TIVO server or a process at said headend and for passing
37 said data and commands to said router for routing to the appropriate destination.

1 8. The apparatus of claim 7 further comprising a digital video disk player means
2 coupled to said router for supplying video data stored on a DVD to said router for routing to
3 said processing means, and wherein said processing means compresses said video data and
4 supplies compressed data to said IP video means and wherein said IP video means
5 encapsulates said compressed data into IP packets addressed to a peripheral that requested
6 said DVD data and encapsulates said IP packets into LAN packets of the type used by said
7 packet switch/router means addressed to the appropriate one or more of said LAN NIC
8 coupled to the peripheral that requested said DVD data, and wherein said packet
9 switch/router means routes said LAN packets to the appropriate LAN NIC for transmission
10 over a local area network to the peripheral that requested said DVD data.

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1 9. The apparatus of claim 7 wherein said computer is programmed by an e-mail
2 application which controls said computer to receive email using a conventional modem or
3 one of said transceiver means and a television and settop decoder coupled to one of said local
4 area network interface circuits via a local area network for display of received e-mail and
5 message composition schemes and to send e-mail using said television and settop decoder
6 coupled to one of said local area network interface circuits via a local area network for
7 displaying a message composition scheme and a wireless remote or wireless keyboard
8 coupled to said gateway for entry of characters to be sent.

1 10. The apparatus of claim 7 wherein said gateway computer is programmed by a
2 PBX application so as to provide voicemail capability and PBX functionality such that
3 incoming calls from the public service telephone network can be routed to the telephone of
4 the individual the caller is calling via a PSTN interface circuit, said packet switch/router,
5 said computer, said local area network interface circuits and one or more local area
6 networks and LAN adapters, or routed to a voicemail file stored on a hard disk coupled to said
7 computer, said PBX application also controlling said computer so that outgoing calls can be
8 made from conventional telephones coupled to said gateway via one or more local area
9 networks and LAN adapters using said packet switch/router and a PSTN interface circuit.

1 11. The apparatus of claim 7 wherein said computer is further programmed by a
2 PBX application so as to provide voicemail capability and PBX functionality such that
3 incoming calls from the public service telephone network can be routed to the telephone of
4 the individual the caller is calling via a PSTN interface circuit, said packet switch/router,
5 said computer, one or more conventional tip and ring pairs and an interface circuit, or
6 routed to a voicemail file stored on an area of a hard disk of said TIVO server means reserved
7 for voicemail messages, said PBX application also controlling said computer so that outgoing
8 calls can be made from conventional telephones coupled to said gateway via one or more
9 conventional tip and ring pairs and an interface circuit using said packet switch/router and
10 a PSTN interface circuit.

1 12. The apparatus of claim 7 wherein said computer is further programmed with an
2 HTTP web server program for controlling said computer to serve web pages to browsers

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3 browsing the internet via said packet switch/router and an interface means for interfacing
4 to the internet to provide an always on connection to the internet.

1 13. The apparatus of claim 7 wherein said computer is further programmed with an
2 answering machine program to control said computer to record messages for unanswered
3 incoming telephone calls from a public service telephone network interface or a voice-
4 over-IP channels.

1 14. The apparatus of claim 7 wherein further comprising a display coupled to a
2 display adapter which is coupled to said packet switch/router and further comprising a
3 keyboard or other input device coupled to an interface circuit which is coupled to said packet
4 switch/router, said keyboard and display for controlling said gateway by issuing commands
5 to said computer and displaying user interface data and/or command and/or program icons
6 on said display, and wherein said packet switch/router and said local area network interface
7 cards cooperate to allow any peripheral coupled by a LAN to any local area network interface
8 card to communicate with any other peripheral coupled by a LAN to a different local area
9 network interface card through said packet switch/router.